

Statement of

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before the

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House Committee on Transportation and Infrastructure
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Chairman Mica and Members of the Subcommittee:

Thank you for the opportunity to comment on the Next Generation Air Transportation System (NGATS) Financing Options. I am a Professor of Aeronautics and Astronautics at the Massachusetts Institute of Technology and the Co-Chair of the FAA Research and Development Advisory Committee (REDAC). The REDAC is a congressionally mandated committee which advises the FAA Administrator on research and development. I have also participated in the NGATS Executive Council.

The development and implementation of the Next Generation Air Transportation System (NGATS) is essential for the future economic vitality of our country our quality of life. The nation relies on air transportation but our infrastructure is approaching capacity limits at key points in the system. As we approach these capacity limits, nominal interruptions, such as weather, result in nonlinear amplification of delay. This can be seen in Figure 1 where, beginning in 1988, delays began to spike up in the summer months due to increased traffic levels and summer convective thunderstorms. These delays abated somewhat due to reduced air traffic after the September 11, 2001 attacks, but have returned, in recent years as air traffic has increased.

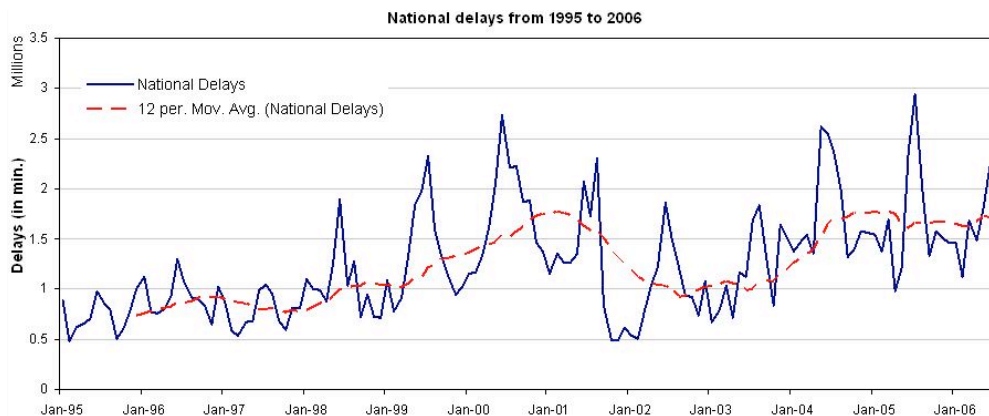


Figure 1. National Delays.

There is a general consensus, by those who have investigated this issue, that the current air transportation system paradigm will not scale to meet the future demand for air traffic. An aggressive national response is required, otherwise, we face extensive delays or restrictions to air travel to and around our major metropolitan areas which will impair our regional and national competitiveness and our quality of life. In addition to capacity other emerging issues such as security, fuel availability and environmental concerns further challenge the air transportation system. NGATS offers the promise of a coordinated national response to these challenges.

Recognizing the importance of NGATS, the REDAC established a working group on Financing the Next Generation Air Transportation System chaired by Mr. Jerry Thompson. The goal was to identify the level of resources required, as well as available options for funding and financing research and development, capital projects, and the operations cost of NGATS. The effort focused on the FY2006 through 2025 time frame and I will attempt to briefly summarize the approach and results.

The approach the working group took was to compare a reference Status Quo scenario to the NGATS scenario. For each scenario Best, Worst, and Baseline cases were defined to scope the range of operating costs. The group also considered opportunities to reduce costs through introduction of advanced technologies and techniques or outsourcing, but did not consider issues such as labor contracts, privatization or major structural changes in the FAA organization.

Status Quo Scenario

In the Status Quo Scenario IFR traffic was projected to grow at the FAA 2005 forecast rate for the next 10 years and a slightly lower rate after that due to expected degradation in system performance. Operations costs were estimated with the following assumptions. The Worst case assumed no productivity improvements in operations. The Best case assumed a 1% per year productivity improvement for the next 10 years and then 0.5% per year resulting in a 15% reduction in cost growth over the 20 years of the projection period. The Baseline case assumed productivity improvement rate equal to one half of the Best case.

Airport Improvement Program (AIP) funding was projected at current levels of \$3.55 billion per year (note: all projections are in constant 2005 dollars). Facilities and Equipment (F&E) funding was projected using the ATO Planning and Finance Office estimates. Research and Development funding was projected at a constant rate of \$125 million per year. The total FAA cost for the Status Quo scenario over the 20 year period is shown in Figure 2.

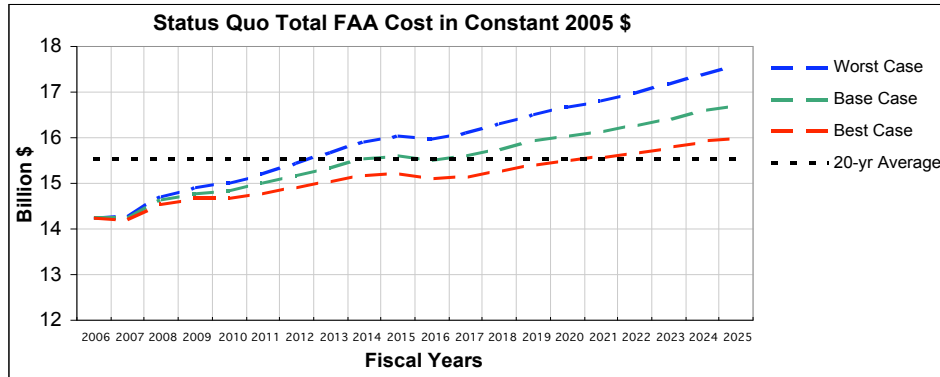


Figure 2. Total Annual FAA Costs for the Status Quo Scenario.

NGATS Scenario

In order to evaluate the NGATS Scenario, the working group first developed a “Roll Out” of NGATS capabilities in 5 year increments over the 20 year projection period. The capability roll out was developed with the input of the JPDO and was based on the best available understanding of the evolving NGATS plan at the time of analysis. The high level NGATS capabilities included:

- Network Enabled Information Access
- Performance Based Services
- Advanced Air Traffic Automation Services
- Aircraft Trajectory-Based Operations
- Weather Assimilation Into Decision Loops
- Broad-Area Precision Navigation
- Equivalent Visual Operations
- Super Density Operations
- Layered Adaptive Security

The capability rollout included a prototype implementation plan which was used to estimate R&D, Facilities and Equipment costs and Operations funded activities necessary to develop the NGATS capabilities.

The NGATS Operations costs were modeled using Best, Worst and Baseline estimates. For the first 5 years of the period the NGATS Operations costs were assumed to be the same as the Status Quo scenario. After 2011 the Best case NGATS assumption is that operations costs would be reduced about 2% per year, resulting in a 25% cost savings by 2025. The Baseline case assumed that NGATS cost savings would offset traffic growth and that operations costs would remain at 2011 levels in constant dollars. The Worst case assumed that the cost per operation would remain fixed and that operations costs would increase with traffic. The NGATS and Status Quo operational costs are shown in Figure 3.

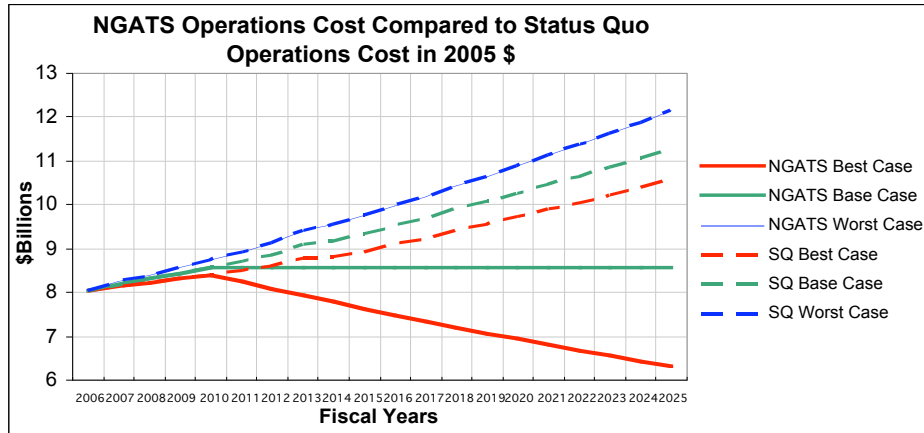


Figure 3. FAA Operational Costs for the NGATS and Status Quo Scenarios.

A top down estimate of the NGATS R&D Costs was made based on the NGATS capability roll out and is shown in Figure 4. The R&D costs include FAA R&D costs and also costs from other JPDO agencies such as NASA, DOD, TSA and NOAA. Because NASA Aeronautics activities have refocused on lower Technology Readiness Levels (TRL), more of the R&D transition burden will shift to the FAA and an increase in FAA R&D costs of approximately \$100 million annually is projected to be required to cover this gap. The DOD and DHS contribution to NGATS are probably underrepresented in these estimates due to the difficulty the working group had in obtaining strong insight into those R&D programs. The direct NGATS R&D efforts are projected to taper off around 2020 as the research will move into the implementation phase. However it is likely that additional R&D funds will be necessary to prepare for post NGATS system improvements.

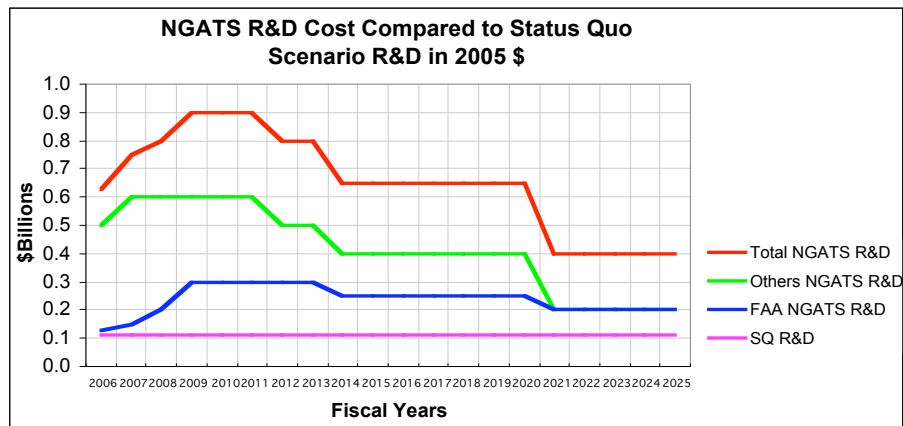


Figure 4. Estimated NGATS Research & Development Costs.

The NGATS Facilities and Equipment cost estimates are shown in Figure 5 along with the Status Quo scenario F&E costs. These estimates were developed in coordination with the JPDO and ATO Planning and Finance Offices. It should be noted that these costs only include FAA F&E costs and do not include other agencies' F&E or user equipage costs. In

the NGATS scenario the AIP costs are assumed to be the same as the Status Quo scenario at current annual levels of \$3.55 billion 2005 dollars.

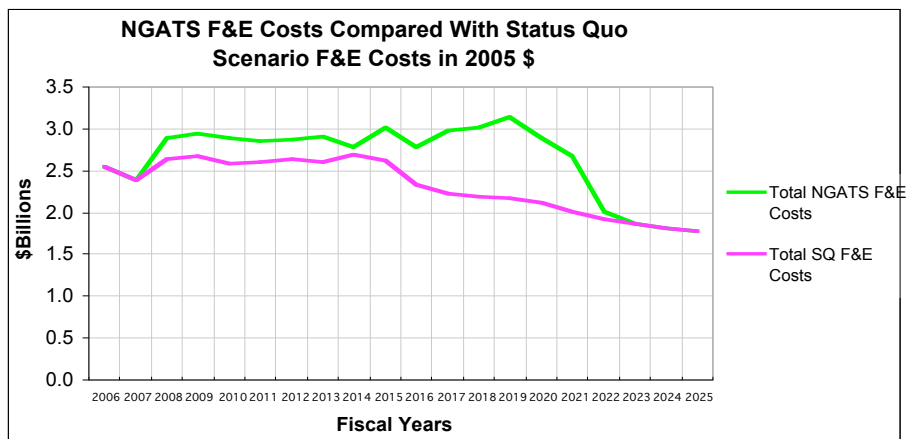


Figure 5. FAA Facilities and Equipment Costs for the NGATS and Status Quo Scenarios.

The total NGATS Costs are presented along with the total Status Quo scenario costs in Figure 6. In both the Status Quo and NGATS scenarios the annual costs are on the order of \$15 billion (2005 dollars). Based on the projections NGATS will require an initial investment above the Status Quo levels but is likely to have reduced annual costs in the mid 2010-2020 time period. It should also be noted that the Status Quo scenario will not provide sufficient capacity to meet expected demand and the NGATS is expected to provide improved capacity, as well as improved environmental and security performance.

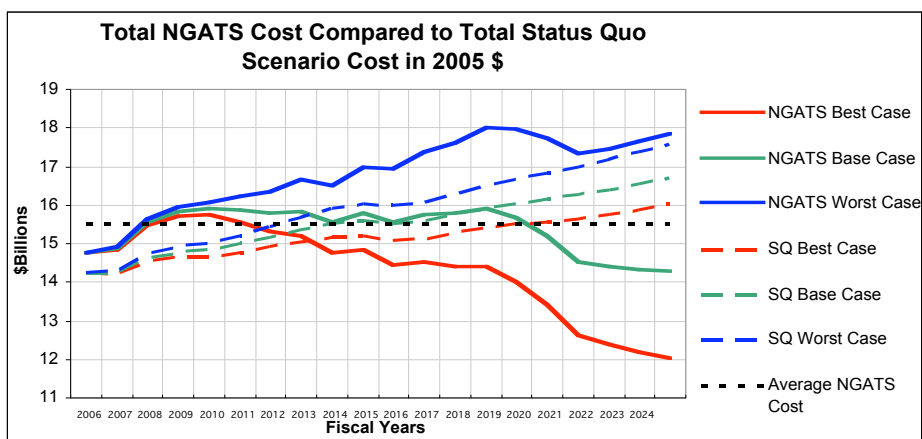


Figure 6. Total FAA Costs for the NGATS and Status Quo Scenarios.

NGATS Funding Requirements

In order to estimate FAA NGATS Funding Requirements the working group compared the cost estimates with a model of the FAA Aviation Trust Fund revenue. The trust fund model was a parametric Best, Worst, Baseline case model. Because the FAA trust fund revenue estimates have been optimistic over the past few years, the FAA forecast was

assumed as the Best case and was discounted by 4% and 10% for the Baseline and Worst cases, respectively.

Another important factor is the level of contribution from the general fund to the FAA budget. The rationale for a general fund contribution is that a safe and efficient air transportation system is a public good which benefits the economy as a whole and supports military and other federal operations. It is also consistent with American values to make the National Airspace System (NAS) affordable to as many users as possible. The general fund contribution is currently determined by a statutory formula and was approximately 20% of the total FAA budget in 2005 and 18% in 2006. For the analysis, several assumptions were made regarding the contribution from the general fund including the current statutory formula and fixed percentages. An example of this analysis is shown in Figure 7.

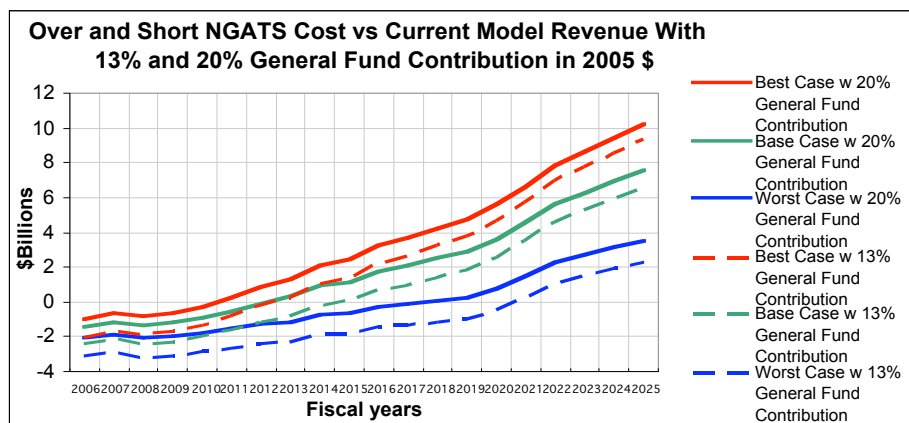


Figure 7. Example of NGATS Scenario Revenue Surplus/Shortfall with Different General Fund and Trust Fund Assumptions.

The results indicate that the continued use of the current FAA trust fund revenue rates will lead to approximately a \$1 billion shortfall over the next several years without an increase in the General Fund contribution. This projection assumes a General Fund contribution to the FAA budget on the order of 20% (2005 levels).

The working group explored a number of alternatives for closing the near term funding gap including:)

- Reduction of costs (Operations, F&E, R&D, AIP),
- Increase user taxes and fees,
- Increasing the general fund contribution,
- Financing options that bridge the near term gap to repay with longer term surpluses.

Regarding the first point, the FAA is pursuing substantial cost reductions in operations and other costs, for example, the outsourcing of Flight Service operations. The working group identified additional cost saving opportunities. A composite annual cost savings on the order of \$500 million is a reasonable objective for these cost reduction activities but will not be realized immediately.

The working group made a preliminary assessment of user taxes and fee approaches:

- Current revenue approach with rate adjustments,
- Fuel tax or fee only
- Weight/distance fee,
- Distance fee.

No one approach was identified as optimal or thought to be acceptable to all stakeholders. A hybrid approach is likely. More detail is included in the full working group report.

Conclusion

Successfully transforming the NAS into a Next Generation Air Transportation System (NGATS) that meets America's future aviation needs is a demanding project that will require twenty years of consistent and stable funding, management, and oversight to be successfully and efficiently completed. All the while, the system must safely and efficiently provide services every day to satisfy an ever-expanding demand for air transportation.